

# Notice of Allowability

Application N .

10/614,958

Examiner

Anatoly Vortman

Applicant(s)

CHU ET AL.

Art Unit

2835

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed on 08 July 2003.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☒ The drawings filed on 08 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7/8/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.



Anatoly Vortman  
Primary Examiner  
Art Unit: 2835

### REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

The allowability resides in the overall structure of the device as recited in independent claims 1 and 6, and at least in part, because:

claim 1 recites: "a first metal terminal layer electrically connected to the upper electrode foil with at least one non-full-circular conductive through hole and at least one full-circular conductive through hole; a second metal terminal layer electrically connected to the lower electrode foil with at least one non-full-circular conductive through hole and at least one full-circular conductive through hole"; and,

claim 6 recites: "a first metal terminal layer electrically connected to the upper electrode foils of the at least two over-current protection modules with at least one non-full-circular conductive through hole and at least one full-circular conductive through hole; a second metal terminal layer electrically connected to the lower electrode foils of the at least two over-current protection modules with at least one non-full-circular conductive through hole and at least one full-circular conductive through hole".

The aforementioned limitations in combination with all remaining limitations of the respective claims, are believed to render said independent claims 1 and 6 and all claims dependent thereon patentable over the art of record.

The closest device to the present invention is taught by Fig. 1 and 2 of US/6,665,164 to Chu et al., (Chu) (Applicant Admitted Prior Art (AAPA), Fig. 1 and 2 of the instant application).

AAPA (Chu) teaches PTC laminate 10 comprising: a PTC material layer (11), an upper electrode foil (13) and a lower electrode foil (14) covering the PTC material layer (11), a first metal terminal layer (15) electrically connecting the upper electrode foil (13), a second metal terminal layer (16) electrically connecting the lower electrode foil (14), a solder mask (18) disposed between the first metal layer (15) and the second metal layer (16), and an insulating layer (17) isolating the upper electrode foil (13) from the second metallic layer (16) and the lower electrode foil (14) from the first metallic layer (15). From the top view, the PTC laminate (10) comprises a plurality of conductive through holes (12) and each conductive through hole (12) is electroplated with conductive material inside. A cutter is used to cut off the conductive through hole (12) along the center to form a half-circular conductive through hole (21), and an packaging process is performed to complete the over-current protection device (20), as shown in FIG. 2, said half-circular conductive hole (21) electrically connects said first and second terminal layers (15, 16) to said upper and lower electrode foils (13, 14), respectively, but did not disclose that *the first and second metal terminal layers electrically connected to the upper and lower electrode foils, respectively, with at least one non-full-circular conductive through hole and at least one full-circular conductive through hole*, as required by independent claims 1 and 6 of the instant application.

The following relevant to the present invention references teach various surface mounted PTC protection devices:

US/6392528, 6576492, 6593843, 6606023, 6628498, 6640420, 6665164, 6686827, and JP/2000-188,207.

None of the cited references either taken alone or in combination are believed to render the present invention unpatentable as claimed.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg can be reached on 571-272-2800, ext 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anatoly Vortman  
Primary Examiner  
Art Unit 2835

AV.

A handwritten signature in cursive script, appearing to read "A. Vortman", followed by a horizontal line.